PC-35 VEGETATION/PLANTING

Refer to: ITD Standard Specifications, Sections 620 and 711.06.
For assistance, contact the Roadside Vegetation Manager in ITD Headquarters.

BMP Objectives

- ☒ **Perimeter Control**
- ☒ **Slope Protection**
- ☐ **Borrow and Stockpiles**
- ☒ **Drainage Areas**
- ☐ **Sediment Trapping**
- ☒ **Stream Protection**
- ☒ **Temporary Stabilizing**
- ☒ **Permanent Stabilizing**

Definition and Purpose

- Permanent vegetation/planting is the process of using live plants, plant parts (stem cuttings), roots, or cut sod for long-term or permanent vegetative cover (shrubs, trees, grass, or forbs) on disturbed areas or areas that need additional assistance for soil/slope stabilization and erosion control. The plants can be potted in containers, tublings, bare rootstock, cuttings, rhizomes, stolons, shoots, sprouts, or rolled or cut sod.
- Plantings can serve various soil stabilization and erosion control functions, and in a planted area will usually grow rapidly and large enough to provide quicker benefits than plant species grown from seed.
- The use of live plants (trees, shrubs, grass, or forbs) provides greater aesthetic and biological diversity by quickly establishing deeper root depth and aboveground growth.
- Stem cuttings from woody plants, such as willows, cottonwoods, or similar plants placed in holes in the ground aid in providing slope, water barb, or stream bank stabilization.
- Bundles of stem cuttings (wattles) from growing willows, alders, or similar plants, placed and secured in horizontal trenches, aid in providing slope and stream bank stabilization.
- Plant roots, stolons, rhizomes, sprouts, or shoots (sprigging), mechanically or manually incorporated into the top layer of soil, provide quicker plant growth, especially in wet/moist areas.
- The placement of continuous sod (turf) cuts or patch pieces (plugs) is a form of permanent planting that provides, where needed, immediate ground cover with established vegetation.

Appropriate Applications

Planting live trees and shrubs is a preferable method for roadside revegetation and, in combination with permanent seeding, can provide very effective soil/slope stabilization and erosion control.

Vegetation/planting applications may include:

- Finished and permanently seeded slopes that remain undisturbed for a long period.
- Areas adjacent to forests, wetlands, or other naturally occurring woody and non-woody vegetation.
- Slopes where a large quantity of rocks are present.
- Slopes subject to shallow-seated (slide) failure.
- Abandoned or closed roads or source sites.
- All types of landscaping projects.
- Stream bank restoration, wetlands, wildlife habitat, or riparian areas.
- Buffer strips, grassy swales, or berms.
- Areas where moisture in the soil is removed through transpiration by plant growth.
- Using cuttings to construct bundles (wattles), installed horizontally in the soil in riparian, moist, or wetland areas.
- Using the root systems of some species of plants to incorporate or sprig into the soil.
- Using sod or turf to provide a more rapid form of erosion control.
- In combination with other erosion control measures, such as riprap, gabions, rock mulch, and temporary or permanent seeding.
- Vegetative buffer strips which reduce surface water runoff, provide biofiltration, reduce noise pollution, or act as a screen for viewing purposes.

Limitations

Vegetation/planting limitations include:

- Live native plant species may be required, although they may be hard to establish.
- Limited availability of some species.
- Higher purchase and installation costs.
- Water application may be necessary to assure plant survival.
- Season of planting may be more restrictive to assure survival.
- Cannot be substituted for retaining walls or similar structures to stabilize over-steepened, raveling, or unstable slopes.
- Sight distance may be restricted by plantings.
- Overgrowth of plants into safe or recovery zone.

- Plants restrict snow removal and storage.
- Plants shade an area of the roadway, causing slick and unsafe conditions in the winter.
- Plants may perform as a living snow fence and cause drifting of either snow or dust onto the roadway, creating unsafe driving conditions.
- Plants may shield or harbor wildlife, creating unsafe conditions for both the public and the wildlife.
- Sod or turf requires irrigation (landscape) availability.

Design Parameters

- Planted shrubs and trees are appropriate tools in reestablishing vegetation in sensitive areas or areas that require a quicker stand of vegetation than the normal procedures of either seeding or allowing adjacent vegetation to volunteer onto disturbed sites.
- Wetlands and other various projects must consider plant species that are healthy, preferably native, and adapted to the disturbed site and climate. The planting process requires proper site preparation, fertility and soil amendments. The plant material shall conform to the Standard Specifications concerning care, condition, identification (species), and inspection.
- Provisions for continued maintenance and care of plants after planting should be considered, along with watering during the required establishment period.
- Plants should be specified as to container size, balled and burlaped, bare root, cuttings (length or size), and, in the case of containers, tublings, etc., caliper, or height.
- Additional requirements, such as the use of amended topsoil, fertilizer, and inoculation of beneficial soil microorganisms, should be considered.
- More detailed specifications of nursery-grown plant material are provided in the current edition of the American Standard for Nursery Stock (ANSI Z 60.1).
- Additional information can be obtained from TN Plant Materials No. 32, A User's Guide to Description, Propagation and Establishment of Native Shrubs and Trees for Riparian Areas in the Intermountain West (USDA–Natural Resource Conservation Service) and the Practical Streambank Bioengineering Guide, A User's Guide for Natural Streambank Stabilization Techniques in the Arid and Semi-arid Great Basin and Intermountain West (USDA–Natural Resources Conservation Service), and the ITD Roadside Revegetation Guidebook.
- Technical assistance regarding plant species selection, planting, and spacing requirements can be obtained by contacting the ITD District Environmental Planner or the Roadside Vegetation Manager in ITD Headquarters.

Construction Guidelines

- Make sure that planting sites are adequately graded, soil conditions are acceptable, and tree locations and planting areas for shrubs, vines, and ground covers are marked and approved before planting begins. Check the requirements of the contract.

- Examine plant materials before use to ensure that species, species health, container sizes, and roots are acceptable.
- Store bundled bare root planting stock and cuttings, whether tree or shrub species, in a cool, moist place from time of receipt until time of planting. This time should not exceed 10 days unless refrigerated.
- Store planting stock (not bare root) in shade, out-of-doors, and lightly sprinkle with water to maintain a moist soil from the time of receipt to the time of planting. The storage time should not exceed 30 days.
- Construction Planting Procedures:
  - Voluntary or unskilled labor may be used in planting. However, a supervisor skilled in proper planting techniques should direct the labor.
  - Plants should be carefully removed from the containers, if any, and placed in the planting holes so that the crown of the plant is at the surface of the soil. No air space should be allowed around the roots, nor should the roots be folded under. Plants in individual containers made of decomposable material can be planted without removing them from the container.
  - Fertilizer or soil amendments should be applied at the rate specified.
  - Soil should be wetted to field capacity at the time of planting and each time the soil moisture level drops below the permanent wilting point.

Maintenance and Inspection

- Conduct inspections as required by the NPDES permit or contract specifications during construction.
- Periodic inspection and maintenance will be required based on post-construction site conditions.
- Make any repairs necessary to ensure the measure is operating properly.
- Irrigation of the plantings during the first 2 years following planting is recommended to increase the survival rate. Water as often as necessary during periods of intense heat or lack of rain.
- Remove and replace dead plants to restore the prescribed number of living plants per acre.
- Check for and correct areas where protective measures may have to be made.